

We claim

Claim 1

1 A method for automatically generating a network subnet configuration by monitoring IP
2 Address Resolution Protocol (ARP) frames on the network and building and maintaining a table
3 including a list of learned subnets, the ports associated with each of the learned subnets and a
4 mask associated with each learned subnet for identifying hosts belonging to the subnet, said
5 method including the process steps set forth below:

6 establishing and maintaining in memory a table of learned IP subnets, each of which
7 includes a characterizing learned subnet address, a mask for identifying the IP address bits
8 common to all members of the learned subnet and the forwarding domain of the subnet;

9 intercepting IP ARP frames;

10 extracting the from and to IP addresses from an intercepted IP ARP frame:

11 examining the table of learned subnets to determine if the extracted IP addresses belong
12 to one or more of the learned subnets;

13 if neither IP address belongs to a learned subnet, defining a new learned IP subnet address
14 for inclusion in the table stored in the memory from the common elements in the prefix of the IP
15 addresses, including the port over which the ARP frame was received in the forwarding domain
16 of the learned subnet and generating a mask which identifies all of the common elements in the
17 prefixes of both IP addresses.

Claim 2

1 The method set forth in claim1 including the following process steps:

2 if only one IP address belongs to a previously learned subnet, examine the subnet mask
3 and modify it include all the common elements in the prefix of both IP addresses in the ARP
4 frame; and,

5 add the port over which the ARP frame was received to the port list associated with the
6 learned IP subnet if it was not already in the list of associated ports.

Claim 3

1 The method set forth in claim 2 including the following process steps:
2 if the IP addresses in the received ARP frame belong to different learned subnets:
3 combine the learned subnets to form a new learned subnet
4 create a new mask which includes the common prefix IP address elements of both host IP
5 addresses engaged in the ARP frame; and,
6 add the port over which the IP ARP frame was received to the combined forwarding
7 domains of the previously identified subnets if that port was not included therein.

Claim 4

1 A method for automatically generating a network subnet configuration by monitoring IP
2 Address Resolution Protocol (ARP) frames on the network and building and maintaining a table
3 including a list of learned subnets, the ports associated with each of the learned subnets and a
4 mask associated with each learned subnet for identifying hosts belonging to the subnet, said
5 method including the process steps set forth below:
6 maintaining in memory a table of learned IP subnet addresses, each of which includes a
7 characterizing address, a mask for the IP address bits common to all members of the learned
8 subnet and the forwarding domain of the subnet;
9 intercepting IP ARP frames;
10 extracting the from and to IP addresses from an intercepted IP ARP frame;
11 examining the table of learned subnets to determine if the extracted IP addresses belong
12 to one or more of the learned subnets;
13 if neither IP address belongs to a learned subnet, defining a new learned IP subnet address
14 for inclusion in the table stored in the memory from the common elements in the prefix of the IP
15 addresses, including the port over which the ARP frame was received in the forwarding domain
16 of the learned subnet and generating a mask which identifies all of the common elements in the
17 prefixes of both IP addresses;

